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A143 (P048) The use of agro-industrial syrups rich in organic carbon to enhance crop productivity:

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One of the major challenges of this century is to meet requirements for food and feed of a growing population while decreasing the environmental impacts of production. The use of biostimulants becomes of considerable importance, as it can increase agricultural productivity, reducing fertilization costs and its impacts. Moreover, such biostimulants can be agro-industrial sub products, increasing its utilization efficiency and value-addition, and helping solving the pollution problem, which otherwise their disposal may cause. We propose to assess the effect of biostimulants (syrups) rich in organic carbon, on soil microbial activity and on maize productivity under real agronomic conditions. The syrup SYR1 was previously tested in a pot experiment using soils from three maize fields with distinct textures. It was shown that that SYR1 was able to persistently enhance microbial activity and potassium availability on soils from maize fields with low organic matter content. SYR1 seems to work through a stimulation of the soil microbial activity, which releases soil nutrients in agreement with the plant needs and allows the use of lower doses of fertilizers. Field trials of the behavior of SYR1 are being developed on a poor soil with low fertilization plot in Southern Portugal. Maize productivity and quality will be assessed, as well soil microbial activity and functionality. Results will be discussed in an integrative way, taking in consideration the two pillars of agriculture: food security and environmental sustainability. Contradictory results between pot and field trials will be discussed.